

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re Application of:	)	
	)	Group Art Unit: Unassigned
John N. Vergne	)	
	)	Examiner: Unassigned
Application No.: 09/773,524	)	
	)	
Filed: February 2, 2001	)	Date: September 18, 2006
	)	
For: METHOD AND APPARATUS FOR	)	
UTILIZING THE FULL CAPACITY		
OF A PARTICULAR OF MINE		
HOIST FOR EXCAVATING DEEP		
SHAFTS		

**PETITION FOR REVIVAL OF AN APPLICATION FOR PATENT ABANDONED**  
**UNINTENTIONALLY UNDER 37 C.F.R. 1.137(b)**

**MAIL STOP PETITIONS**

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

Applicant respectfully petitions the Commissioner to revive the above-identified application that became unintentionally abandoned on May 14, 2001, for failure to timely respond to the outstanding Notice of Missing Parts. Applicant's representative has never received the either the Notice of Missing Parts or the Notice of Abandonment, but was informed on September 15, 2006, by USPTO personnel in the Office of Initial Patent Examination that the application became abandoned on May 14, 2001. Applicant respectfully submits that the entire delay in filing the required reply from the due date for the reply until the filing of a grantable petition pursuant to 37 C.F.R. 1.137(b) was unintentional, for the reasons discussed in detail below.

## FACTS

1. On February 2, 2001, Applicant filed an application for METHOD AND APPARATUS FOR UTILIZING THE FULL CAPACITY OF A PARTICULAR OF MINE HOIST FOR EXCAVATING DEEP SHAFTS, which has been assigned U.S. Patent Application No. 09/773,524.

2. On September 15, 2006, while reviewing the application, a typographical error was discovered in the Customer Number provided on the Utility Patent Application Transmittal and on the Application Data Sheet. Although the attorney of record and the correspondence address were correctly listed on the Utility Patent Application Transmittal, the Customer Number was incorrectly entered as “21760”. The correct Customer Number is “27160”. For the convenience of the attorney in the Office of Petitions, a copy of a certified copy of the application as filed for U.S. Patent Application No. 09/773,524 is attached.

3. Also, on September 15, 2006, Applicants representative contacted the Office of Initial Patent Examination, by telephone, and was informed that this application became abandoned on May 14, 2001. Applicant’s representative has received neither the Notice of Missing Parts nor the Notice of Abandonment. Because of the typographical error in the Customer Number, Applicant’s representative is unable to view information about this application in Private PAIR, and, of course, since the application was never published, information about this application is not available in Public PAIR.

4. Applicant has received the return receipt postcard which was submitted with the application as filed , and three certified copies of the application as filed, which were requested on December 18, 2001. The postcard bears the original USPTO date stamp indicating receipt of the application on February 2, 2001, and bears a stamp of the assigned Application Number, which is 09/773,524. The postcard contains the correct Firm name and correspondence address.

The certified copy of the application as filed contains the filing date and application number stamped on the first page of the Utility Patent Transmittal.

**RELIEF REQUESTED**

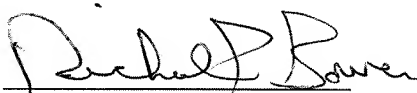
Applicant respectfully requests that the subject application be revived and that the Notice of Missing Parts be mailed to the correspondence address for Customer number 27160. A change of correspondence address, which requests that the correspondence address be changed to Customer Number 27160, is being filed concurrently with this petition.

**FEE**

The Commissioner is authorized to charge the \$750.00 petition fee for a Small Entity in accordance with 37 CFR § 1.17(m) to Deposit Account Number 50-1710. The Commissioner is also authorized to charge any additional fees deemed necessary to successfully revive this application, and to further maintain its pendency under 37 CFR §§ 1.116 and 1.117 (or credit any overpayments), to Deposit Account Number 50-1710.

Should there be any questions, the undersigned can be contacted in our Washington, D.C. office at telephone number (202) 625-3500. All correspondence should be sent to the address given below.

Respectfully submitted,  
KATTEN MUCHIN ROSENMAN LLP

By:   
Richard P. Bauer  
Attorney for Applicant  
Reg. Number 31,588

Patent Administrator  
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East Lobby, Suite 700  
Washington, D.C. 2007  
Facsimile: (202) 298-7570

# THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

UNITED STATES DEPARTMENT OF COMMERCE

United States Patent and Trademark Office

December 20, 2001

THIS IS TO CERTIFY THAT ANNEXED HERETO IS A TRUE COPY FROM THE RECORDS OF THE UNITED STATES PATENT AND TRADEMARK OFFICE OF THOSE PAPERS OF THE BELOW IDENTIFIED PATENT APPLICATION THAT MET THE REQUIREMENTS TO BE GRANTED A FILING DATE UNDER 35 USC 111.

APPLICATION NUMBER: 09/773,524

FILING DATE: February 02, 2001



By Authority of the  
COMMISSIONER OF PATENTS AND TRADEMARKS

A handwritten signature in cursive script, reading "L. Edelen".

L. EDELEN  
Certifying Officer



PTO  
1033 U.S. PAT.  
09/17/92  
02/02/01

**UTILITY  
PATENT APPLICATION  
TRANSMITTAL**  
(Only for new nonprovisional applications under 37 CFR 1.53(b))

Attorney Docket No.	2288.38
First Named Inventor or Application Identifier	
JOHN N. VERGNE	
Express Mail Label No.	

**APPLICATION ELEMENTS**  
See MPEP chapter 600 concerning utility patent application contents.

**ADDRESS TO:** Commissioner for Patents  
Box Patent Application  
Washington, DC 20231

1. <input checked="" type="checkbox"/> Fee Transmittal Form (Submit an original, and a duplicate for fee processing)	7. <input type="checkbox"/> CD-ROM or CD-R in duplicate, large table or Computer Program (Appendix)
2. <input type="checkbox"/> Applicant claims small entity status. See 37 CFR 1.27.	8. <input type="checkbox"/> Nucleotide and/or Amino Acid Sequence Submission (if applicable, all necessary)
3. <input checked="" type="checkbox"/> Specification <span style="float:right">Total Pages <input type="text" value="12"/></span>	a. <input type="checkbox"/> Computer Readable Form (CRF)
4. <input checked="" type="checkbox"/> Drawing(s) (35 USC 113) <span style="float:right">Total Sheets <input type="text" value="2"/></span>	b. Specification Sequence Listing on:
5. <input type="checkbox"/> Oath or Declaration <span style="float:right">Total Pages <input type="text"/></span>	i. <input type="checkbox"/> CD-ROM or CD-R (2 copies); or
a. <input type="checkbox"/> Newly executed (original or copy)	ii. <input type="checkbox"/> paper
b. <input type="checkbox"/> Copy from a prior application (37 CFR 1.63(d)) (for continuation/divisional with Box 17 completed)	c. <input type="checkbox"/> Statements verifying identity of above copies
i. <input type="checkbox"/> <b>DELETION OF INVENTOR(S)</b> Signed Statement attached deleting inventor(s) named in the prior application, see 37 CFR 1.63(d)(2) and 1.33(b).	
6. <input checked="" type="checkbox"/> Application Data Sheet. See 37 CFR 1.76	

9. <input type="checkbox"/> Assignment Papers (cover sheet & document(s))
10. <input type="checkbox"/> 37 CFR 3.73(b) Statement (when there is an assignee) <input type="checkbox"/> Power of Attorney
11. <input type="checkbox"/> English Translation Document (if applicable)
12. <input type="checkbox"/> Information Disclosure Statement (IDS)/PTO-1449 <input type="checkbox"/> Copies of IDS Citations
13. <input type="checkbox"/> Preliminary Amendment
14. <input checked="" type="checkbox"/> Return Receipt Postcard (MPEP 503) (Should be specifically itemized)
15. <input type="checkbox"/> Certified Copy of Priority Document(s) (if foreign priority is claimed)
16. <input type="checkbox"/> Other: _____

**ACCOMPANYING APPLICATION PARTS**

17. If a CONTINUING APPLICATION, check appropriate box and supply the requisite information:

<input type="checkbox"/> Continuation	<input type="checkbox"/> Divisional	<input type="checkbox"/> Continuation-in-part (CIP)	of prior application No. ____/____
Prior application information: Examiner _____			Group/Art Unit: _____

For CONTINUATION OR DIVISIONAL APPS only: The entire disclosure of the prior application, from which an oath or declaration is supplied under Box 5b, is considered a part of the disclosure of the accompanying continuation or divisional application and is hereby incorporated by reference. The incorporation can only be relied upon when a portion has been inadvertently omitted from the submitted application parts.

**18. CORRESPONDENCE ADDRESS**

<input checked="" type="checkbox"/> Customer Number or Bar Code Label	21760 (Insert Customer No. or Attach bar code label here)	or	<input checked="" type="checkbox"/> Correspondence address below
NAME: KATTEN MUCHIN ZAVIS			
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Suite 1600			
City	Chicago	State	IL
Country	USA	Telephone	312-902-5200
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CLAIMS	(1) FOR	(2) NUMBER FILED	(3) NUMBER EXTRA	(4) RATE	(5) CALCULATIONS
	TOTAL CLAIMS (37 CFR 1.16(c))	25	-20 =	5	X \$ 18.00 = \$90.00
	INDEPENDENT CLAIMS (37 CFR 1.16(b))	4	-3 =	1	X \$ 80.00 = \$80.00
	MULTIPLE DEPENDENT CLAIMS (if applicable) (37 CFR 1.16(d))			\$270.00 =	\$000.00
				BASIC FEE (37 CFR 1.16(a))	\$710.00
	Total of above Calculations =				\$880.00
	Reduction by 50% for filing by small entity (Note 37 CFR 1.9, 1.27, 1.28).				\$440.00
	TOTAL =				\$440.00

19. Small entity status

- a. ☐ A small entity statement is enclosed.
- b. ☐ A small entity statement was filed in the prior nonprovisional application and such status is still proper and desired.
- c. ☐ Is no longer claimed.

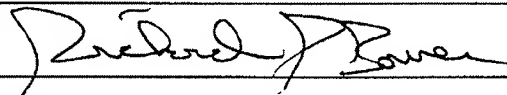
20. ☐ A check in the amount of \$ \_\_\_\_\_ to cover the filing fee is enclosed.

21. ☐ A check in the amount of \$ \_\_\_\_\_ to cover the recordal fee is enclosed.

22. The Commissioner is hereby authorized to credit overpayments or charge the following fees to Deposit Account No. 06-1205:

- a. ☐ Fees required under 37 CFR 1.16.
- b. ☐ Fees required under 37 CFR 1.17.
- c. ☐ Fees required under 37 CFR 1.18.

**SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT REQUIRED**

NAME	Richard P. Bauer, Reg. No. 31,588
SIGNATURE	
DATE	February 2, 2001

INVENTOR INFORMATION

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State or Province of Residence:: Ontario  
Country of Residence:: Canada  
Citizenship Country:: Canada

CORRESPONDENCE INFORMATION

Correspondence Customer Number:: 21760  
Fax:: (312) 902-1061

APPLICATION INFORMATION

Title Line One:: METHOD AND APPARATUS FOR UTILIZING THE FULL  
Title Line Two:: CAPACITY OF A PARTICULAR TYPE OF MINE HOIST  
Title Line Three:: FOR EXCAVATING DEEP SHAFTS

Total Drawing Sheets:: 2  
Informal Drawings?: Yes  
Application Type:: Utility  
Docket Number:: 2288.38  
Secrecy Order in Parent Appl.?: No

REPRESENTATIVE INFORMATION

Representative Customer Number:: 21760

PRIOR FOREIGN OR APPLICATIONS

Application One:: 60/180,044  
Filing Date:: 2/3/00  
Country:: USA  
Priority Claimed:: Yes

BMR (Blair multi-rope) hoist. The BMR hoist is in use at nearly all deep mines in two configurations, one using a mechanical coupling (double universal joint) to connect a single motor to the shafts of both hoist drums. The other makes use of an electric coupling between the single motor and the hoist drum shafts.

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When a very deep shaft is to be sunk (or excavated) for a new mine it is normal practice to use a BMR hoist to remove the broken rock, since the BMR hoist can later be used when the mine is in operation to raise ore. However, during the shaft sinking stage, the BMR hoist is not fully utilized. The two ropes on each drum cannot be attached to one shaft sinking bucket, in view of the above mentioned tangling problem. In addition, in order to make the BMR hoist applicable for both shaft sinking and mine operation, the hoist motor was found to be severely over-sized for the shaft sinking phase. This meant that the motor had to run at reduced capacity (approximately one half the horsepower requirement for which it was designed. In addition, the efficiency of an over-sized electrical motor is reduced when operating at a fraction of its design rating and this resulted in a waste of about ten percent of the electrical power fed to the hoist.

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Mine shafts are currently being excavated and contemplated for excavation to even greater depths (approximately 2 ½ kilometers). Therefore, there remains an urgent need for a practical device which is capable of hoisting broken rock during a shaft sinking procedure for extremely deep mine shafts, with sufficient speed and economy.

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#### SUMMARY OF THE INVENTION

Briefly stated, the present invention provides a device for excavating a mine shaft, comprising a pair of drums, each drum having a pair of regions, each region wound with one of a pair of hoist ropes; four refuse carriers, each attached to one of the hoist ropes and drive means for driving the drums to deliver two carriers at a time to a work site in the shaft.

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In another aspect of the present invention, there is provided a device for removing refuse material from a work site in a mine shaft, comprising a pair of drums, each drum having

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drive motor and a transmission arrangement.

5 In one embodiment, the method includes the step of winding the hoist ropes on one drum opposite to the hoist ropes on the other drum, the step of positioning the carriers at the work site and the step of determining a difference in weight between the two carriers at the site. Preferably, the positioning step further includes the step of providing four guide regions, each to provide a path for one carrier.

10 In yet another of its aspects, the present invention provides a device for excavating a mine shaft, comprising a drum having a pair of regions, each region wound with one of a pair of hoist ropes; a pair of refuse carriers, each of which is attached to one of the hoist ropes and drive means for driving the drum to deliver the carriers to a work site in the shaft.

15 The present invention should significantly improve the rate of advance of sinking very deep shafts, with reduced electrical energy consumed to perform the task.

#### BRIEF DESCRIPTION OF THE DRAWINGS

20 A preferred embodiment of the present invention will be provided, by way of example only, with reference to the appended drawings, in which:

Figure 1 is a plan view of a shaft excavation;

25 Figure 2 is a sectional view taken on line 2-2 of figure 1; and

Figure 3 is schematic view of a device for used in the excavation of figure 1.

#### DESCRIPTION OF THE PREFERRED EMBODIMENTS

30 Referring to the figures, there is provided a device 10 for removing refuse material from a work site in a mine shaft 12. The device has a pair of drums 14, 16, each of which has

a pair of regions 14a, 14b, 16a, 16b. One of four hoist ropes 18a, 18b, 20a and 20b is wound on each region. It can be seen from figure 3 that the hoist ropes on drum 14 are wound oppositely to the hoist ropes on the other drum 16.

5           Four carriers 30a, 30b, 32a, 32b, in this case in the form of buckets, are provided for carrying refuse material between the work site and the surface. Each bucket is attached to one of the hoist ropes.

10           A drive means is provided for driving the drums, wherein the device is operable to deliver, in repetition, two groups of two buckets to the work site. The drive means includes a single drive motor 34 and a transmission arrangement 34a for driving both drums. However, more than one motor may be used and the transmission may include a mechanical, electrical or other suitable transmission unit. In this case, the axles of the drums are joined by a universal joint shown at 34b, for delivering power from the motor 34 to the drum 16 via drum 14.

15           A positioning means shown generally at 40 positions the buckets at the work site 12. The positioning means includes a frame assembly 42 with four guide regions or wells 44 which in turn provide four paths, each for a corresponding bucket.

20           Figure 2 shows a shaft excavation with one arrangement for two buckets at the work site, in this case the bottom of the shaft excavation in position where the buckets may be weighed before being simultaneously hoisted to the surface.

25           Thus, the device 10 utilizes the unused compartment of the drums of a conventional multi-rope mine hoist by being wound with an additional wire rope, being substantially identical to the length, weight, construction and diameter of the wire rope already wound in the other compartment of each drum. The free end the wire ropes are each fitted to a shaft sinking bucket of substantially identical weight and volumetric capacity, that is within about  
30           three percent .

During operation, the drums are driven in the same direction, but because the drums are wound opposite to one another, one drum winds up its wire ropes while the other unwinds its wire ropes. With two buckets, for example buckets 30a, 30b, filled with broken rock at the work site, the motor drives the drum 16 to wind up the wire ropes 20a, 20b and thus hoist  
5 the buckets upward toward the surface. Meanwhile, the buckets 32a, 32b (empty and at the surface) are lowered as a result of the unwinding of the wire ropes 18a, 18b.

Each bucket is also provided with a guidance device (known as a cross-head) shown at 46, wherein each guidance device is of substantially identical weight and dimension. The guidance device is used to keep the shaft sinking bucket confined to its designated travel path as it rises and descends in the shaft.  
10

When the two descending buckets reach the positioning means 40 near the shaft bottom their cross-heads are automatically detached when they abut the frame assembly 42 situated in their travel path. The two buckets are lowered further through the wells 44 to a point just beneath the frame assembly 40 called the "hanging mark". At this point, when the shaft men are ready for the buckets on the shaft bottom they "ring it down", by sending a  
15 message to the surface for the motor to be operated at reduced speed, so that the buckets can travel downward at reduced speed without guidance to a leveled area on the pile of broken rock. Here the buckets are filled with broken rock by a machine designed for that purpose and known to those skilled in the art.

When the buckets are full, a message is then conveyed to the surface and the motor is  
20 activated in reverse, causing the buckets to be hoisted to just clear the broken rock pile. Here, the wire ropes are allowed to "steady" themselves. The filled buckets maybe weighed by a device that determines the rope-end load by measuring the hydraulic pressure of compensating support devices at the sheave wheel atop the head frame, or by other means  
25 such as a simple level made from a clear plastic hose filled with water. In this latter case, if the filled buckets hang to the same level, normally they are of equal weight. Once the shaft men are suitably trained, they may be able to judge, by eye, when the buckets have substantially the same weight, to make measurement otherwise unnecessary.

Generally, the weights of the filled buckets should be within ½ tonne (500 kilograms) of one another. If not, broken rock is removed from the heavier bucket or added to the lighter bucket before both are hoisted simultaneously to surface.

5 A weighing system that can determine that the rope-end loads are nearly equal is desirable, in some cases, to ensure that the buckets reach the dump position on surface simultaneously. This is due to the fact that the wire ropes stretch under load. As a consequence, if the loading is not equal the buckets will reach surface one ahead of the other. To determine the allowable out of balance load the following formula may be used:

10 
$$e = FL/EA$$

where e is the difference in elevation of the buckets when they have reached the surface dump in the head frame, F is the rope-end load in Kilonewtons (kn.), L is the length of wire rope between the surface dump and the shaft bottom in meters, E is the modulus of elasticity of the rope in Gigapascals (GPa) and A is the area of circle enclosing the wire rope section in square millimeters.

15 Thus for a difference in "end load" (weight of the bucket and its payload) of 500 kg, will produce a force of 4.9 kn at the rope-end. With a length of 2.600 kilometers; a modulus of 65 GPa; and a rope diameter of 51 millimeters, this weight difference will produce a differential rope stretch of 0.096 meters.

20 Thus, device 10 provides a method for hoisting or elevating shot ( or broken) rock more efficiently during the excavation of a deep mine shaft. This is done by simultaneously hoisting two shaft sinking buckets (or other conveyances) toward the surface of the shaft, while two others are lowered into the shaft. This allows the full capacity of a multi-rope double drum winder (such as a BMR hoist, for example) to be utilized for shaft sinking. Moreover, it increases the efficiency of the electrical motors driving the BMR hoist since it  
30 may be run at near its design capacity.

While the above device makes use of a pair of drums, each coupled with a pair of buckets, there may be some cases where a single drum can be used instead of two. In this case, the single drum would have a pair of regions, each region wound with one of a pair of hoist ropes. Each of a pair of refuse carrier may then be attached to one of the hoist ropes and drive means can be provided for driving the single drum to deliver the carriers to a work site in the shaft.

## CLAIMS

5 1.A device for excavating a mine shaft, comprising a pair of drums, each drum having a pair of regions, each region wound with one of a pair of hoist ropes; four refuse carriers, each attached to one of said hoist ropes and drive means for driving said drums to deliver two carriers at a time to a work site in the shaft.

10 2.A device as defined in claim 1 wherein the drive means includes a single drive motor and a transmission arrangement for driving both of said drums.

3.A device as defined in claim 1 wherein the hoist ropes on one drum are wound oppositely to the hoist ropes on the other drum.

15 4.A device as defined in claim 1 further comprising positioning means for positioning said carriers at said work site.

5.A device as defined in claim 4 wherein said positioning means provides four paths, each path for a corresponding carrier.

20 6.A device as defined in claim 5 wherein said positioning means includes four guide regions, each to receive one carrier.

7.A device as defined in claim 1 further comprising means for determining a difference in weight between the two carriers at said site.

25 8.A device as defined in claim 1 wherein each carrier includes a bucket.

30 9.A device for removing refuse material from a work site in a mine shaft, comprising a pair of drums, each drum having a pair of regions, each region wound with one of a pair of hoist ropes; four carriers for carrying the refuse material, each carrier being attached to one of said hoist ropes, drive means for driving said drums, wherein the device is operable to deliver, in

repetition, two groups of two carriers to the work site.

10.A device as defined in claim 9 wherein the drive means includes at least one drive motor and a transmission arrangement for driving both of said drums.

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11.A device as defined in claim 9 wherein the hoist ropes on one drum are wound oppositely to the hoist ropes on the other drum.

12.A device as defined in claim 9 further comprising positioning means for positioning said carriers at said work site.

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13.A device as defined in claim 12 wherein said positioning means provides four paths, each path for a corresponding carrier.

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14.A device as defined in claim 13 wherein said positioning means includes four sleeve regions, each to receive one carrier.

15.A device as defined in claim 9 wherein each carrier includes a bucket.

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16.A device as defined in claim 9 further comprising means for determining a difference in weight between the two carriers at said site.

17.A method for excavating a mine shaft, comprising the steps of:

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providing a pair of drums;

dividing each drum into a pair of regions;

winding each region with one of a pair of hoist ropes;

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providing four refuse carriers and attaching each to one of said hoist ropes; and

driving the drums in order deliver two carriers at a time to a work site in the shaft.

18.A method as defined in claim 17 wherein the driving step includes the step of coupling both of said drums to a single drive motor and a transmission arrangement.

5

19.A method as defined in claim 17 further comprising the step of winding the hoist ropes on one drum opposite to the hoist ropes on the other drum.

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20.A method as defined in claim 17 further comprising the step of positioning said carriers at said work site.

21.A method as defined in claim 20 wherein the positioning step includes the step of providing four paths, each path for a corresponding carrier.

15

22.A method as defined in claim 21 wherein the positioning step further includes the step of providing four guide regions, each to receive one carrier.

20

23.A method as defined in claim 17 further comprising the step of determining a difference in weight between the two carriers at said site.

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24.A method as defined in claim 17 wherein each carrier includes a bucket.

25.A device for excavating a mine shaft, comprising a drum having a pair of regions, each region wound with one of a pair of hoist ropes; a pair of refuse carriers, each of which is attached to one of said hoist ropes and drive means for driving said drum to deliver the carriers to a work site in the shaft.



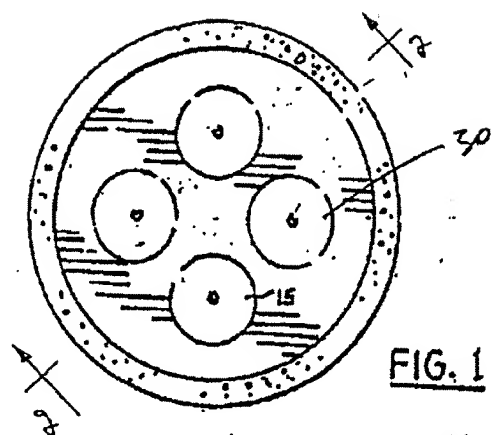
## ABSTRACT

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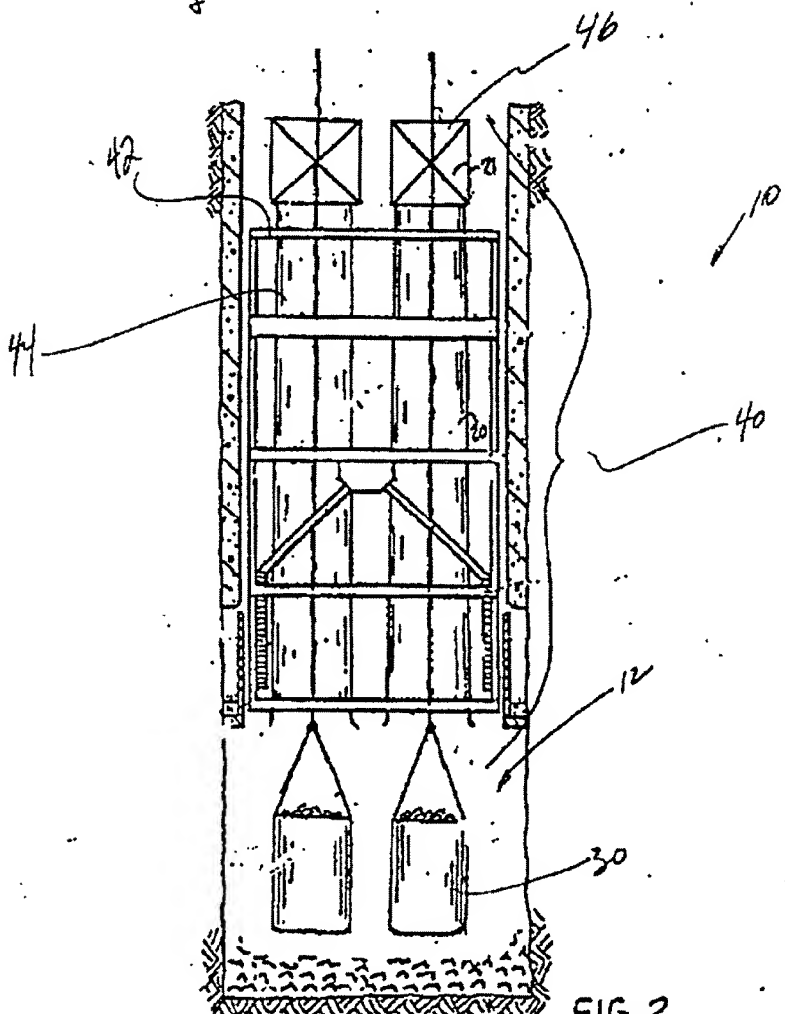
### EXCAVATING A MINE SHAFT

Disclosed is a device for excavating a mine shaft, comprising a pair of drums, each drum having a pair of regions. Each region is wound with one of a pair of hoist ropes. The device is provided with four refuse carriers, each of which is attached to one of the hoist ropes. Drive means is also provided for driving the drums to deliver two carriers at a time to a work site in the shaft.

10



**FIG. 1**



**FIG. 2**

